



LITHUANIAN SPORTS UNIVERSITY

STUDY MODULE PROGRAMME (SMP)

Module Code	B	001	M	024	Accredited until				Renewal date		
	Branch of Science		Progr.	Registr. №.							

Entitlement

Sports Genetics

Prerequisites

Bachelor in health sciences

Course (module) Learning Outcomes

№.	Learning Outcomes	Teaching / Learning Methods	Assessment Methods
1	Knowledge in principles of genetics and its application to research in sports as athletes' selection, development, screening for specific conditions as mortality risk due to congenital abnormalities.	Formal lecture, Seminar	Examination, Mid-term examination, Seminar
2	Knowledge in existent genetics and sports genetics data bases, genetic testing platforms, societies, associations, consortia.	Case analysis (Case study), Discussion, Formal lecture, Scientific paper analysis, Seminar	Examination, Mid-term examination, Seminar
3	Knowledge in genotyping methodologies, ability to performs genetic testing in the lab.	Exercise classes, Seminar	Examination, Mid-term examination, Seminar

Main aim

Introduce master students to the achievements in genetics and its application in sports sciences

Summary

Modern genetics tightly integrate molecular research methods which were the primary driving force in the recent development of health sciences, including medicine, biology, physiology and exercise/sport physiology. Master students of health sciences at LSU therefore require basic understanding in modern genetics as well as principles of its research methods and possibilities of their implementation into the field of sports and exercise physiology.

Level of module

Level of programme		Subject group (under the regulation of the area)	Subject level
Cycle	Type		
Second	Master	Mokslo srities pagrindų	Deepening

Group under financial classification

6.Fizinių, biomedicinos, technologijos mokslų studijos (mokytojai)

Syllabus

№.	Sections and themes	Responsible lecturer
1.	Introduction. Overview of the topics.	
2.	Genotype and muscle size	
3.	Genotype and muscle strength	
4.	Genotype and training response	
5.	Muscle adaptation and satellite cells	
6.	Skeletal muscle as endocrine organ. Muscle communication with other tissues. Myokines	
7.	Gene doping	
8.	Non-coding RNAs	

№.	Sections and themes	Responsible lecturer
9.	Epigenetics	
10.	Behavioral genetics and genetics of motor learning	
11.	DNA isolation and genotyping (ACTN3 R577R)	

Evaluation procedure of knowledge and abilities:

References

№.	Title	Edition in Lithuanian Sports University library		In Lithuanian Sports University bookstore	Number of ex. in the methodical cabinet of the depart.
		Pressmark	Number of exemplars		
1.	Voet D., Voet J. G., Pratt Ch. W. (2006). Fundamentals of biochemistry. Life at the molecular level. John Wiley & Sons, Inc. 1150 p.			Yes	
2.	Strachan T, Read, AP. (2003). Human Molecular genetics. Garland Science. 674 p.			Yes	
3.	Spurway N, Wackerhage H. (2006). Genetics and molecular biology of muscular adaptation. Elsevier. 273 p.			Yes	
4.	Roth SM. Genetics primer for exercise science and health. 2007. Human Kinetics. P. 177.			Yes	
5.	Rančelis V. Genetika. Vilnius: Lietuvos MA leidykla. 2000. P. 46			Yes	
6.	Mildažienė V. Ir kt. (2004). Ląstelės biologija. Kaunas. VDU.			Yes	
7.	Lewin B. (2000). Genes. Oxford University Press.			Yes	
8.	Kučinskas V. Genetika. Kaunas, Šviesa, 2001. P.174.			Yes	
9.	Bouchard C, Hoffman E.P. (2011). Genetic and molecular aspects of muscular performance. Wiley-Blackwell.			Yes	

Additional literature

№.	Title

Coordinating lecturer

Position	Degree, surname, name	Schedule №.
Associate Professor		496

Subdivision

Entitlement	Code
a	2006

Study module teaching form №. 1

Semester	Mode of studies	Structure				Total hours	Credits	
		Theory	Seminars	Lab Works	Ind. work			
A	S	D	16	4	10	230	260	10

Languages of instruction:

Lithuanian	L	English	E	Russian	R	French	F	German	G	Other	Oth.
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